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DG RESEARCH

SEVENTH FRAMEWORK PROGRAMME
THEME 5 - Energy

ENERGY.2010.5.2-1: CCS - storage site characterisation

Collaborative Project– GA No. 256705

SiteChar

Characterisation of European CO_2 storage

Deliverable N° D9.5
Minutes of the Third Workshop for Stakeholders

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Written By	Samuela Vercelli (UniRoma1-CERI), Salvatore Lombardi (UniRoma1-CERI), Maxine Akhurst (BGS), Florence Delprat-Jannaud (IFPEN)	February 2014
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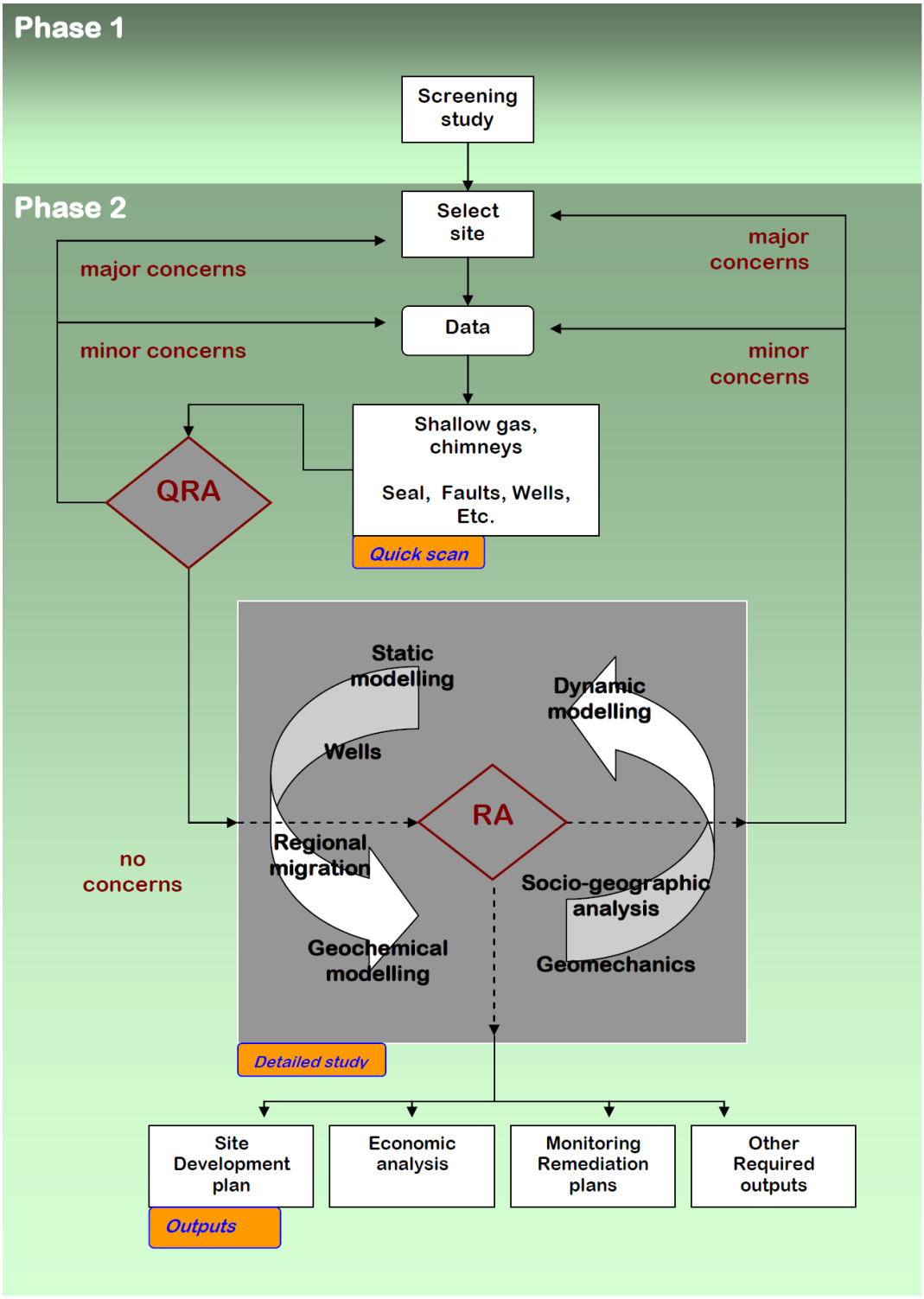
Content

1 SiteChar 3rd Stakeholder Workshop: The WORKFLOW



In the figure, the schematic representation of the workflow process

The 3rd Sitechar Stakeholder Workshop offered the opportunity to specialist stakeholders, such as industrial operators, regulators and researchers in the field, to learn about the site characterisation workflow developed in SiteChar and discuss with SiteChar researchers the technical challenges presented by the workflow implementation. It was structured to illustrate the different phases of the workflow and their application to the five sites studied in the SiteChar project. For this workshop, the presenters integrated the results from all sites and addressed the main issues that the workflow procedure needs to take into account. Cooperation with the FP7-funded CO_2Care project allowed for a presentation on well integrity based on the experience of that project.
The workshop first introduced the workflow concept and structure, based on risk assessment-led site characterisation and linking its implications to storage permit applications and the importance of the collaboration between regulator and operator. It then illustrated the modelling challenges and related outcomes, with regard to the static, dynamic, geomechanical and geochemical modelling.
The workshop took place on the 24th September 2013 at TNO, Hoofddorp, near Amsterdam, the Netherlands and was attended by 21 participants. The presentations can be found on the SiteChar website at;
http://www.sitechar-co2.eu/NewsData.aspx?IdNews=91&ViewType=Actual&IdType=534.

1.1 AGENDA OF THE WORKSHOP

SiteChar Third Workshop
Agenda

SEVENTH FRAMEWORK PROGRAMME

9:30 – 9:50	The SiteChar project	F. Delprat-Jannaud (IFPEN)
9:50 – 10:20	The workflow: Concept and key components	R. Arts (TNO)
10:20 – 10:35	'Dry-run' storage permit applications	J. Pearce (NERC-BGS)
10:35 – 10:50	Risk assessment let site characterisation	M. Akhurst (NERC-BGS)
10:50 – 11:20	Questions & Discussions	R. Arts (TNO)
10:20 – 11:45	*Coffee Break*	
11:45 – 12:00	Applying the workflow to the building of the static model	V. Volpi (OGS)
12:00 – 12.15	CO_2 pressure and migration modelling at different scales: from basin to reservoir	A. Lothe (SINTEF)
12:15 – 12.30	Geomechanical characterisation of CO_2 storage sites: assessment of stability at an offshore multi-store site	S. Durucan (Imperial)
12:30 – 13:00	Questions & Discussions	F. Delprat-Jannaud (IFPEN)
13:00 – 14:00	*Lunch*	
14:00 –14:15	What is the relevance of baseline data for site characterisation?	C. Nielsen (GEUS)
14:15 – 14:30	Collaboration with the CO2Care project: Well integrity issues	J.P. Deflandre (IFPEN)
14:30 – 15:00	Questions & Discussions	S. Vercelli (UniRoma)
15:00 – 15:15	Key messages and conclusions	R. Arts (TNO)
16:00 – 16:30	Wrap-Up / End of Workshop	F. Delprat-Jannaud (IFPEN)

2 PRESENTATIONS

The SiteChar Project. The workshop was introduced by **Florence Delprat-Jannaud** of IFPEN, coordinator of the SiteChar project, who provided an overview of the workflow development and of the SiteChar project activities and objectives in relation to the five study sites investigated by the project. She also introduced the concept of the SiteChar exemplar permit application and the results of the techno-economic analysis performed on four of the five sites. Finally she reported about the SiteChar public engagement activities in Scotland and Poland and about key findings from this important part of the project which are of interest to policy makers and prospective site operators.

The workflow: Concept and key components. Rob Arts from TNO, the institute that coordinated the development of the workflow procedure, presented the workflow concept, stages and components. He highlighted the very multidisciplinary nature of the work performed and the fact that there are many links between the different fields of expertise, in particular pointing out that storage risks can be fully defined only by combining multiple areas of expertise. The concept of the workflow developed in SiteChar is risk driven, site characterisation being about understanding the risks of storing CO_2 at a specific site. Risks can be reduced to a minimum by adopting appropriate injection strategies, site design and monitoring plans and by being prepared with corrective measures in case of need. Of course there is always a residual risk as in any operation of this kind, whose thresholds need to be defined by the operator and the competent authority when corrective measures are to be implemented. Permit Performance Conditions have been identified and through their monitoring during operation the risks can be managed and, when appropriate, corrective measures put in place. He then introduced the workflow, which is aligned with the EU Storage Directive and has been tested and improved in the five site studies. The first phase of the workflow is the screening study, followed by a qualitative risk analysis based on a detailed study of all available data. The sites that are selected, having passed this initial examination, then undergo a very detailed site characterisation study, which is not simply a study of site geology, reservoir behaviourand large-scale simulation of flow but investigations targeted to produce the required components for a storage permit application. He then illustrated an example of the risk matrix and clarified that there is an iterative dimension to the workflow which is required to find optimum solutions. Thus risk assessment is a continuous process in the workflow as the phases of the more detailed study can lead to the identification of new risks which can be mitigated by site characterisation, site design and monitoring. During all this process, it is very important that the site operator maintains a close collaboration with the competent authority. Once the possible risks have been sufficiently characterised, the data can be used to write the permit application, which includes the plan for developing the site together with the monitoring plan, corrective measures plan, environmental impact assessment plan and economic analysis to assess if operation of the proposed site is viable.

'Dry-run' storage permit applications. The following presentation was made by **Jonathan Pearce** from the British Geological Survey and dealt with the CO_2 storage permit application process. In SiteChar two 'dry-run' permit application have been made, one on the Danish site and the other on the Scottish site. Jonathan Pearce explained the reasons for this, linked to the need to test and demonstrate the process of permitting to achieve the objectives of this part of the work, i.e. the development of permit application procedures fit-for-purpose and compliant with regulatory

frameworks. He then illustrated the differences in the process at the two sites, which enabled the understanding of various kinds of issues. For instance, the need of injection tests and alternative economic ways to collect information. He explained that another very important issue that was analysed concerns the definition of the storage complex boundary: this needs to take into account both pressure responses and injected CO_2 plume extent; informal discussions with regulators indicate that an area around the plume maximum extent, which would allow for differential monitoring, could constitute the limit of the storage complex. A topic that presents difficult challenges concerns the interaction of the increased pressure due to CO_2 injection with other users, of particular relevance for regulators, who might need to undertake their own risk assessment and supporting investigations, to provide guidance to operators. If there is a need to produce water in order to manage pressure it is considered there are differing concerns for onshore and offshore sites regarding water discharge. An important part of the work was the definition of precise limits to site behaviour termed Permit Performance Conditions which, if exceeded, indicate that a significant irregularity or leakage has occurred. Concerning the post-injection period, the definition of the exact evidence required to enable site closure and transfer of responsibility to the statewill be a crucial aspect to be agreed in the negotiation phase.

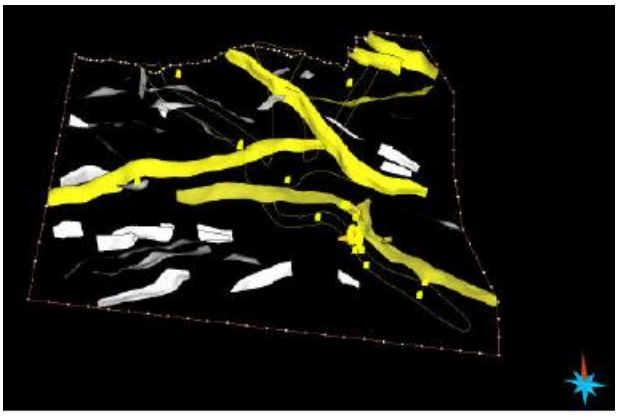
Risk assessment-led site characterisation. The presentation from **Maxine Akhurst** from the British Geological Survey, focused on the concept of risk-led site characterisation. In this sense, site characterisation is about understanding the risks to secure containment of CO_2 at a specific site and its objective is to anticipate, reduce and mitigate risks or monitor unmitigated risks. The researchers in the SiteChar project have worked together to identify the potential risks to an offshore site beneath the Outer Moray Firth in the UK North Sea. Individual risks were grouped into overarching risks to the prospective storage site (right column on figure) and included in five categories of risk (left column on figure).

Containment risks	Migration / leakage of injected CO_2
	Loss of injected CO_2 to biosphere
	Displacement or alteration of brines
Adverse effect on other resources	Hydrocarbon fields
	Others
Reduced technical performance	Reduced Injectivity
	Reduced capacity
Monitoring / Regulatory	Monitoring issues
	Regulatory issues
Economic / Environmental	Socio-economic
	Storage costs
	Environmental

Overarching risks (left) and categories of risk (right) to a prospective storage site

A risk register was generated where each risk is described and scores assigned in relation to its probability of occurrence and severity of consequence if it happened and uncertainties associated with each. An overall assessment for each risk was calculated from the scores and used to rank in order of greatest perceived risk. Maxine Akhurst then illustrated the application of risk-led site characterisation to risk reduction activities on the Outer Moray Firth site. Teams of researchers addressed the most highly ranked risks in order to reduce them. They reassessed and re-ranked the risks after risk mitigation or reduction activities. They also identified other risks that had been revealed by the site characterisation activities that had not been identified before. The outcomes of this exercise were used for the 'dry-run' storage permit (licence) application, including the site development plan, the preventative measures plan, the monitoring plan, the corrective measures plan and the site post-closure plan.

Applying the workflow to the building of the static model. Valentina Volpi from OGS gave a presentation on the application of the workflow for building a static geological model. The objective of the static modelling is to create a computerised representation of the subsurface based on geophysical and geological observations. She described the different stages of the process to build the static model, from the collection of data to their interpretation, from the building of the geological model and of the structural model to the generation of volumetric grids and their population with petrophysical properties.



The geological model: 3D model of the fault network

Also the role of information from other workflow elements was highlighted and the input that the static model provides for the dynamic flow, geomechanical and geochemical modelling. In conclusion, the static model provides information mainly related to the geological assessment of the storage complex, from which possible risk factors and technical conditions not favourable for storage can be derived. It enables the identification of uncertainties and risk factors such as low porosity that will lead to low CO_2 storage capacity; low permeability that may generate injectivity issues; cap rock integrity, where the seal rock condition is not well known. All of these factors have to be evaluated and their possible impact has to be considered and implications to storage site costs. She concluded her presentation stressing the importance of the quality of the data used to build the model, since this influences the level of detail of the analysis that can be conducted and the degree of resolution of the model representation of the storage site.

CO_2 pressure and migration modelling at different scales: from basin to reservoir. Ane Lothe, from SINTEF, gave a presentation on CO_2 pressure and migration modelling at different scales: from basin to reservoir. She illustrated the use of different model software, such as Petromod, SEMI and Eclipse, to understand how the CO_2 will migrate in relation to the characteristics of the Norwegian Trondelag platform strata. Different injection scenarios were tried, for three possible injection sites. Porosity and permeability parameters were based both on well and literature data, while reservoirs depth and pressure were based only on literature data. Both the injection of a high and a low volume of CO_2 were tested. No water production well was included. The results indicate that the quality of the reservoir is very good, with low compaction and high permeability. Migration and leakage were investigated with the three models; with SEMI loss functions have been introduced while with Eclipse pressure constraints were studied. Also investigated was a possible framework for the study at a smaller regional scale and the effect of reservoir pressure increase and plume development in case sealing faults. In this case also the Pressim simulation tool was used. She concluded that the Trøndelag Platform is a relatively large basin with a number of potential storage structures. Pressure build-up, even under high injection rates are low to moderate.

Geomechanical characterisation of CO_2 storage sites: assessment of stability at an offshore multi-store site. The workshop continued with the presentation of **Sevket Durucan** from Imperial College on the geomechanical characterisation of CO_2 storage sites, in particular addressing the issue of stability assessment at an off-shore multi-store site. He explained that for safe storage of CO_2, the injection pressure should not exceed the fracture pressure of the rock formations. Thus the importance of identifying criteria to control pressure increase, since an unchecked increase in the reservoir pressure may cause reactivation of pre-existing faults or tensile fracturing. A fundamental concept to be considered in this regard is the maximum sustainable pore pressure increase in CO_2 storage. He then illustrated the study of geomechanical processes on the multi-store CO_2 storage site in the Outer Moray Firth, offshore Scotland. Coupled flow and geomechanical simulations of CO_2 injection into the Captain Sandstone aimed at evaluating the impact of CO_2 injection on changes in the stress field and the mechanical stability, including fault re-activation. The flow and geomechanical modelling work was based on the attributed GoCAD and the upscaled Petrel static model. The workflow involved using ECLIPSE for flow simulation and coupled geomechanical modelling in VISAGE™. He illustrated CO_2 injection simulation results with regard to the increase in well-block pressure for different injection rates; overpressure distribution; overpressure ratio for geomechanical stability. He finally discussed the results from geomechanical modelling, assessment of shear failures and stress state scenarios.

What is the relevance of baseline data for site characterisation? The following presentation, by **Carsten M. Nielsen** from GEUS, was dedicated to the relevance of baseline data for site characterisation. The collection of baseline data is part of the monitoring requirements to ensure the safety of a CO_2 storage site. According to the European Storage Directive, monitoring will be ongoing throughout CO_2 storage projects' lifetime, to satisfy the achievement of multiple objectives: monitoring of site performance (predicted vs. observed behaviour); leakage detection; detection of significant irregularities (pressure, plume development); detection of adverse environmental impacts and assistance in the deployment of any corrective measures; verification of long-term storage stability and permanent containment; update site performance assessment; update risk assessment for the site every 5 years. Carsten M. Nielsen described the

characteristics of a monitoring plan, which is site specific and risk driven. He then explained the objectives, challenges and benefits from baseline data collection and illustrated the results of the near surface baseline survey conducted at the Voulund agricultural research site. The survey aimed at the definition of natural baseline values for soil gasses CO_2, O_2, N_2, CH_4, C_2H_4 and He and of the range of natural baseline values, in particular in relation to the influence of land-use and climate seasonality on the temporal and spatial variability. This presentation included also an important public communication note:

> Data should be open to the public and actively disseminated, both during the baseline activities to inform locals regarding what types of values are typically encountered in that area and also during the monitoring phase to support transparency and to illustrate the safety of the storage system. This could take the form of both a web page and distributed brochures. In this manner these types of surveys would not only provide valuable monitoring data, but would also be an important, easy-to-understand platform for dialogue with the local stakeholders, both pre- and during injection.

Public communication note concerning the importance of sharing baseline data with the public

Collaboration with the CO_2Care project: Well integrity issues. The last presentation of the day dealt with well integrity issues and was given by an invited speaker from the CO_2CARE project, **Jean Pierre Deflandre** of IFPEN. The objective of the CO_2CARE project was to prepare well abandonment, anticipating any long term risk of CO_2 leakage at wells. From a technical point of view a number of challenges had to be tackled: the ability to state on the mechanical integrity of a well prior its abandonment; mechanical and geochemical issues for casing, cement and cap-rock interfaces; the presence of impurities in the CO_2 stream; innovative closure or remediation techniques based on salt clogging; testing wellbore Electro Resistivity Tomography (ERT) monitoring approach in combination with seismic surveys for CO_2 migration path imaging. The structure of the work programme revolved around three main activities: laboratory experiments, modelling and application to site cases. The geomechanical modelling was applied to 4 complementary scenarios: an old abandoned appraisal well at Sleipner, an old CO_2 producer well at Montmiral, a depleted gas field well at Rousse, a CO_2 storage well at Ketzin scientific pilot site. A well mechanical history modelling approach was illustrated. The presentation was concluded pointing out the importance of tracking any deviations to state of the art and of laboratory tests for better understanding of material constitutive laws and parameters values given the huge diversity of possible interacting materials / molecules. The lack of baseline data, the long time frame for technological development and remediation and mitigation verification, constitute additional issues which require further investigation.

3 QUESTIONS AND DISCUSSIONS

Throughout the day an intense exchange took place between the presenters and the participants, touching upon a variety of issues, some of which open the way to further exploration. They are reported here in the order in which they were discussed following the presentations:

- **Public engagement activities**. In relation to the results of public awareness work conducted in the project and to the finding that the local population in Poland, where the site was onshore, was mainly concerned about environmental aspects, while for the offshore site in Scotland concerns focused on economic aspects, the advisability of different onshore/offshore public engagement strategies was discussed. Sometimes it is hard to understand the public's reactions, as in the case of the ROAD and Barendrecht projects in the Netherlands, which are just 40 kilometres away but gave rise to completely different reactions. In any case, the experience of the participants indicates that an offshore site should not be considered as irrelevant for public perception, although the reason for such relevance might in some case be economic compensation rather than concerns about geology or containment.

- **Workflow concept**. There is the need to better understand how to manage new risks that might show up after the licence has been awarded. The possible impact has to be considered, to clarify whether a new evaluation is necessary. From the permitting point of view it will depend on the individual country's regulations, linked to the interaction between the operator and the competent authority.

- **Injection tests**. While for research purposes appraisal wells and injection tests play a key role, should they always be part of site characterisation? Since they are quite expensive, it would be important to define when they are really necessary or they might be still another reason for shying away from CCS.

- **Interaction with other users of the subsurface.** An important point is the possible overlap of storage site activities with other users of the subsurface in the same area:
    - In this respect, the authorities, but also other stakeholders, might ask for information on whether storage can interfere, at the present and in the future, with other activities. Answering this question could require a long-term perspective and engagement with many sectors of interest, raising the question 'whose job should it be to work on this?'
    - Site-specific characterisation issues could arise where injection into the deep subsurface implies "going through" other resources at shallower depth.
    - Drilling risk related to CO_2 pressure could become a problem for subsurface activities at greater depth; in case something happens, who is liable, what needs to be done?

- **General plan for use of the subsurface**. It would be important to have a comprehensive plan for the intended use of the subsurface, which should be taken into account in the licensing process. It was noted that making such planning could require a 10 to 15-year time scale.

- **Issues related to water production**:

- Water production, treatment and disposal related to storage has its own costs which still need to be considered and calculated. In SiteChar a certain standard has been made reference to, but there is a lot of room for improving costs' estimation.
- The regulatory regime for water production is important from both the technical and the public perception point of view, but it is at the moment uncertain. The quality of the water is regulated by the law and should not be an issue, but the extraction of huge water volumes for a number of years has implications that are difficult to evaluate today and haven't probably been as yet integrated in the regulation.

- **Consideration of uncertainty in risks evaluation**. Classification of risks in terms of severity and probability could perhaps be integrated by the uncertainty criteria, it could be a tool to get focus on unknowns. Nevertheless this has proved to be very time consuming and although it can be useful to guide team efforts internally, it can be very complicated when communicating with external stakeholders.

- **Compensating the limits of the single models**. A multiplicity of models could help in getting a feeling of the uncertainties and sensitivities in your model. Natural variability and the fact that what happens in reality is always different from what we might expect, requires that we make multiple efforts in making models and testing them, for instance asking different experts to analyse the same datasets. Double checking could be done both internally and with some external experts.

- **Multidisciplinary communication issues**. The sector is highly multidisciplinary, more communication would be required among the different experts and consideration of the constraints of each discipline: for instance the need of modellers to keep it simple and the importance of a dialogue between geologists and geophysicists. It would also be important to avoid closed systems such as when operators work by themselves without communicating with other stakeholders. Integration and understanding of each other and of the different disciplines is also important for the development of an overarching view.

- **Geological system specific modelling**. When developing models, we need a clear definition of the question we are trying to answer with that model, building upon the knowledge we have of the site's geology. For instance, if we want to understand what would be the rate of pressure dissipation, we need first to focus on what kind of geological system we are dealing with and what we know about how the dissipation could develop in that precise kind of system; based on this the specific questions to which that modelling should answer should be formulated.

- **Essential importance of the formation history**. A key step for evaluating how the injected CO_2 will behave, builds on the knowledge about how the geological system formed. Based on this, we will have an idea of how the situation is going to develop and perform in the future. The hydrocarbon history of the formation is very important. We should ask ourselves: what was the hydrocarbon history of the formation? Where was the source rock? We need to answer these questions to understand if the cap-rock is reliably sealed. If there was a source rock and the gas is not there anymore, without having been extracted, then we need to deduce why and when in geological time the gas migrated. This kind of reasoning provides insight into potential gas migration pathways and helps to identify the best areas for storage.

- **Baseline**. Exchange over baseline issues helped focus on some important areas for further investigation:
    - The baseline study is key to distinguish storage site leakage from normal CO_2 flux. Anomalous values could be related to the variation of a number of factors, either at surface or in the subsurface:
        - From the point of view of flux variations due to surface factors, we need further work to include extreme events. For instance, during the spring, when snow and ice melts, there can be a sudden release of the CO_2 that accumulated under the snow. We need to know which extreme events could happen in particular conditions and in specific environments.
        - With regard to variations in CO_2 flux originating from the deeper subsurface, the question was posed whether background values would change when CO2 would be injected. With regard to this, it would be relevant to better understand the interaction between geomechanical stability and background values. In case background flux values should change with CO_2 injection, it will be important to be able to distinguish leakage from normal flux rates.
    - Concerning the baseline study for the Danish site, the question was posed whether, having made the baseline on an analogue at Voulundsite, in case an application for the prospective site should go ahead, the baseline should also be made in Vested itself. Although it can be expected that the results will be very similar, nonetheless the baseline of the storage area needs in any case to be measured. The data from the Voulund area will be a useful reference for a regional understanding of baseline values.

- **Monitoring:** the importance of monitoring the overburden was stressed and of higher density of measurements close to faults, which are possible pathways for gas migration. The selection of the sampling area and frequency would be the same offshore and onshore, but onshore there might be issues with getting access from landowners.

- **Well integrity**. Various issues were also discussed with regard to wells' corrosion and self-sealing mechanisms. For instance, brine circulation deposits salt and thus improves impermeable capacity; in this case, salt clogging works for the good.

Some additional details of the discussions can be found in the following post-workshop notes from Rob Arts:

3.1 Key messages and feed-back by Rob Arts

Site Characterisation

- **The aim of the workshop:**
  - **General workflow for site characterisation, as developed in the SiteChar project, has been presented**
  - **Application of (parts of) the workflow to the various selected sites in the project have been presented**
  - **Feedback on dry-run applications will be sought after this workshop from a.o the government of Scotland on the UK case**
- **This presentation summarizes the feedback collected during discussions at the workshop from stakeholders**

2 *Stakeholder workshop, September 24 2013*

SiteChar workflow

- **Remarks made during the workshop by stakeholders (and others):**
  - **Emphasize the need for a different "public perception" approach in case of onshore versus offshore storage**
  - **Indeed risk assessment for site characterisation is crucial. What will happen though, when "unforeseen" risks become reality. It is stressed, that in that case impact will play a crucial role, a subject (on purpose) not included in the SiteChar project.**
  - **The importance of integration between disciplines has been stressed. Experiences in the project showed, that the level of integration must go up to the level of providing mutual understanding of key issues among each discipline.**

3 *Stakeholder workshop, September 24 2013*

SiteChar workflow

- **Remarks made during the workshop by stakeholders (and others):**
  - Interactions between activities in the subsurface become increasingly important. An interesting discussion arose, to what extent a site operator needs to take potential (even future) interactions into account, even when not having access to all data. Or should this be a task of the government. Examples mentioned are:
    - Geothermal interaction seems to have been handled now by the possibility of site owners to oppose to new projects in their neighbourhood during a legally defined period (e.g. ~6 weeks in the Netherlands)
    - CO2 storage in formations can have an influence on drilling and drilling risks for (non-related) activities at deeper levels (e.g. oil and gas). Liability will be an issue then, as well as technical blockers..

4 *Stakeholder workshop, September 24 2013*

SiteChar workflow

- **Remarks made during the workshop by stakeholders (and others):**
  - Water production for the purpose of pressure relief and cleaning & re-injection of the produced water in the sea was raised as an issue:
    - Can we do it (cleaning) at the scale required in case of large-scale CCS ? Are we technically ready.
    - How will the general public perceive CCS in combination with water production and re-injection (moving one problem to a next problem).
  - The SiteChar study recommends an injection test for appraisal. This led to the issue “who should pay for an appraisal well ?”. The example of Whiterose was mentioned, where the government financed a well. Is this the way forward?

5 *Stakeholder workshop, September 24 2013*

SiteChar workflow

- **Remarks made during the workshop by stakeholders (and others):**
  - **Uncertainty handling and sensitivity analysis through the use of multiple model realizations is necessary for site. characterization, but the question is whether it is sufficiently applied in running storage site studies.**
  - **When screening suitable sites in sedimentary basins, one should always have a clear explanation, why no hydrocarbons are found in the "traps", particularly if hydrocarbons and source rock are present in the basin.**
  - **Related to the previous point, shallow monitoring and characterization of any gas releases prior to CO2 injection should be investigated and the processes should be understood. Monitoring strategies and experiences are needed.**

6 *Stakeholder workshop, September 24 2013*

SiteChar workflow

- **Remarks made during the workshop by stakeholders (and others):**
  - **Earth movement (tremors, fault reactivation, subsidence or uplift) are considered important risks. To evaluate these risks properly a thorough geomechanical analysis is needed as part of the site characterization. What is lacking in many current case studies is good measurements of initial stress conditions (often taken from literature), in order to be able to better define safety margins for the operations.**

7 *Stakeholder workshop, September 24 2013*

4 LIST OF PARTICIPANTS

Eva	Halland	Norwegian Petroleum Directorate	Project Director
Stanislaw	Nagy	AGH	Professor
Szymon	Kuczynski	AGH	Researcher
Maxine	Akhurst	British Geological Survey	Principal Geologist
Samuela	Vercelli	University of Rome La Sapienza	Researcher
Florence	Delprat-Jannaud	IFPEN	CO2 storage project manager
Carsten	Nielsen	Geological Survey of Denmark and Greenland (GEUS)	Senior reservoir engineer
Jonathan	Pearce	British Geological Survey	Principal Geologist
Finn	Dalhoff	Vattenfall	Senior Research Geologist
Lukasz	Klimkowski	AGH UST in Krakow	research/teaching assistant
Rob	Arts	TNO	Dr
Natalia	QUISEL	Veolia	Project Manager
Franz	May	BGR	Dr
Peter	Frykman	GEUS	Senior Research Geologist
Jean Pierre	DEFLANDRE	IFPEN - IFP School	Prof.
Thomas	Le Guenan	BRGM	Project manager
Volpi	Valentina	OGS	Researcher
Korre	Anna	Imperial College	Reader
Durucan	Sevket	Imperial College	Professor
Pagnier	Henk	TNO	Researcher
Tucker	Owain	Shell	Global Deployment Leader - CCS & Contaminated gas at Shell

5 Press release

Press Release **25th September 2013**

3rd SiteChar Stakeholder Workshop:

"Site characterisation workflow for the geological storage of CO_2"

TNO, Hoofddorp - Amsterdam, The Netherlands

Tuesday 24th September 2013

The workflow developed by the SiteChar project for site characterization has been presented on Tuesday 24th September 2013 at TNO, Hoofddorp – Amsterdam - The Netherlands, and relevant aspects have been discussed with the participants.
Issues of data collection and interaction with the authorities, application of the workflow to the building of the static model, development of the risk assessment framework, reservoir modeling, well integrity and baseline data formed the object of the presentations. Integration of economic analysis and social aspects in the characterization flow were also included.

The workshop progressed smoothly with intertwined presentations and discussion. A number of issues were touched upon such as cost effective characterization, differences of public perception onshore and offshore, underground planning for compatibility of different activities, multiple modeling on site data, understanding of site's history and baseline's variability, old wells, importance of multidisciplinary collaboration and many others.

21 participants including representatives of industry and regulators from 8 countries have participated in the 3rd SiteChar Stakeholder Workshop. The contribution and feed-back received from the community of stakeholders indicates that the project is progressing very well in its aim to supply a practical methodology for CO2 storage site characterisation.
A report of the workshop will soon be available on the SiteChar website.
www.sitechar-co2.eu